

SENSOR FOR DETECTING SMALL
CONCENTRATIONS OF A TARGET MATTER

5 ABSTRACT OF THE DISCLOSURE

A sensor for detecting a target matter includes a chemical sensitive layer that is operable to react when exposed to the target matter and a piezoresistive material coupled to the chemical sensitive layer. The chemical sensitive layer is configured such that the reaction of the target matter with the chemical sensitive layer creates an interfacial tension at the interface of the chemical sensitive layer and the piezoresistive material that changes the electrical resistance of the piezoresistive material. However, the chemical sensitive layer is configured such that the reaction of the target matter with the chemical sensitive layer does not affect the bulk properties of the chemical sensitive layer enough to change the electrical resistance of the piezoresistive material.

The sensor also includes an electrical circuit coupled to the piezoresistive material that is operable to detect the change in the electrical resistance of the piezoresistive material due to the interfacial tension.